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THE HOPI IN RELATION TO THEIR PLANT ENVIRONMENT

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The country of the Hopi, in northeastern Arizona, is arid and semi-desert. From the last stronghold of this people on the precipitous boat-shape mesas of the high plateau, offshoots of the mountain knots of the Carrizos, one sees only barrenness, but barrenness painted beyond description. To the south the strange, fantastic outline of lava-capped buttes; to the west, beyond the plain, the faint line of the Mogollones, 110 miles away, flanked by the mighty mountain mass of the San Francisco, and to the north and east mesa after mesa fading into the horizon.

A nearer view of the plain reveals a waste of sand, sparsely dotted with the characteristic vegetation of the arid region and cut by gullies and washes, which rarely by the good will of the rain-gods give a glint of water. A few cottonwoods among the cornfields in the beds of the washes delight the eye by their dark green foliage, amid so much desolation, while on the distant mesas scattered cedars have a foothold.

Clear air, the wonderfully blue sky, and the effect of the bright sun on the many-tinted sandstone make a landscape which the dullest eye must behold with admiration.

As has been pointed out by my colleague, Dr Fewkes, the aridity of the climate has had a profound effect on the religious beliefs and practices of the Hopi. To the traveler going for the first time among the white people experiencing the severe probation of this region, water would seem to be the chief good. One might think that no conversation was ever carried on in

tary life, to agriculture and hunting, and to skill in the arts. This also points to the distinct origin of the Hopi under more favorable culture.

If the Sun is the father of the Hopi, then Corn is their mother. The Ceylonese are said to know sixty ways of cooking rice; the Hopi seem to have as many for corn. There are many interesting matters connected with the cultivation and uses of corn which cannot be entered into here. A sidelight on the frugality and farsightedness of the Hopi is shown by their storage of a reserve supply of corn for two years.

This leads to the observation that the food plants useful to the Hopi are (1) plants under cultivation, both native and acquired, and (2) plants the usufruct of nature. The Hopi brought from their priscan home corn, beans, melons, squash, cotton, and some garden plants. They have acquired peaches, apricots, wheat, and a number of other plants which they infrequently cultivate.[1] Of peaches they are extravagantly fond, and every village has orchards. As the crop failed last year, one of our Indian workmen at Winslow invested all his earnings in peaches, which he would have to carry 80 miles north to his native village. The apricot, of which I saw but a few trees, does not bear, probably from the lack of a fertilizing insect. Very little wheat is raised and that by the Oraibi, at their agricultural summer village of Moenkopi, where cotton also is grown.

Having plants which form the food-supply of the great civilized nations, one might think that the Hopi would be independent of or would disregard the native plants around them. On the contrary, there is almost no plant which the Hopi does not use in some way and no plant to which they have not given a name.

It is true that the Hopi extend their environment by long journeys for various substances. Every berry patch for many miles around is known and visited; a journey of 200 miles or so for salt from the Grand canyon, wild tobacco from the Little Colorado, sacred water from Clear creek, or pine boughs from San Francisco mountain, the home of the snow, is thought of

[1] The Hopi plant corn, watermelons, muskmelons, onions, beans, gourds, chili, sunflowers, squashes, wheat, sorghum, tomatoes, potatoes, cotton, grapes, pumpkins, garlic, coxcomb, coriander, saffron, tobacco, peaches, apricots, and nectarines. They will try any seed that is given them, and among their numerous requests the demand for seed is prominent.

little moment. To my knowledge, an Oraibi man made a continuous run of 160 miles as bearer of a note and answer. The knowledge of the resources of a vast territory possessed by the Hopi is remarkable, and the general familiarity with the names and uses of plants and animals is surprising. Even small children were able to suply the names, corroborated later by adults.

The ancient Hopi were apparently in nowise inferior to their descendants in these matters, as was proven by the excavations undertaken by our party last summer.

In the remains of any ancient culture, stone and bone relics stand as surviving a multitude of other articles which have perished. In many cases even bone, horn, and shell have perished and stone only has endured. It would seem that in many or most cases stone implements represent a very small part of the whole culture. While stone implements are welcome as some clew to the life of a prehistoric people, they are merely better than nothing. Pottery, carvings, and metal make the story somewhat clearer.

There is a tendency to lay too much stress on collections of stone implements *per se*, while their main interest is in their rehabilitation by surviving usages in the present.

These remarks are evoked by a field study of the Hopi tribe of northeastern Arizona with regard to their ethnobotanical and zoological environment and by a comparison of the stone relics found on the surface and in the ruinous dwellings of three ancient Hopi pueblos with the relics of softer, more perishable textures found in the cemeteries of the same pueblos.

In fact, there are some environments in which stone or imperishable materials do not exist. Imagine, for example, the culture of Mr Cushing's ancient Floridians graded by the survival of the stone or shell artifacts which they possessed.

The collection of plants made last summer forms a basis for the ethnobotany of the Hopi. It comprises about 140 species of indigenous plants, with native names and uses, extending the collection made by Dr Fewkes, the account of which was published in the *Anthropologist* for January, 1896. With Dr Fewkes' permission a number of the spring plants in his list have been incorporated in the following list for the sake of completeness.

The determination of the plants was made by Dr J. N. Rose, of the National Museum. The collection, neatly mounted and